

**Recent Results from the Nova Laser\***

B.A. Hammel

*Lawrence Livermore National Laboratory*

Recent experiments on Nova are focused in three major areas: NIF related Ignition Physics; High Energy Density Physics (HEDP) in support of Stockpile Stewardship; and Fast Ignitor Physics. Advances in facility capabilities have resulted in significant progress in all three areas. In the area of Ignition Physics, LLNL, LANL and CEA-Limeil are conducting collaborative experiments to investigate laser/hohlraum coupling and x-ray drive symmetry in gas filled hohlraums using smoothed laser beams (SSD and/or KPPs). In the area of HEDP, research continues in hydrodynamics, material properties, and opacity. Detailed measurements of the equation-of-state of D<sub>2</sub>, and ICF ablator materials, have benefited from diagnostic development in the area of x-ray imaging and optical interferometry. In the area of Fast Ignitor Physics, experiments addressing laser hole boring, hot electron production/transport, and material heating are in progress. Presently, these experiments are performed using the Nova 100 TW laser which produces focused intensities up to  $5 \times 10^{19}$  W/cm<sup>2</sup> (~40J, 0.4 ps). Future experiments will be performed using the recently activated Petawatt Laser (~0.5 kJ, 0.4 ps).

\* Work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract W-7405-Eng-48.